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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,532	01/12/2006	Yu Zhou	NL 030853	1844

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EXAMINER	
PENDLETON, DIONNE	

ART UNIT	PAPER NUMBER
2627	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/564,532	ZHOU ET AL.	
	Examiner	**Art Unit**	
	DIONNE H. PENDLETON	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :----------> 5/15/07
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DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. **Claims 1, 5-7, 9, 12, 17, 21-23, 25 and 28** are rejected under 35 U.S.C. 102(b) as being anticipated by **Bierhoff (Patent Number 5,036,506).**

Regarding claims 1 and 17,

Bierhoff teaches a servo system for controlling position of a sensor assembly in a data readout and/or writing device and method of servo-control for controlling said sensor (said method being taught by the structure of the device), wherein the device includes:

(a) at least one actuating means (“15” in figure 1) for spatially actuating a structural assembly and its associated sensor assembly, the system further comprising:

(b) controlling means (“3” in figure 6 or 8) in communication with said at least one actuating means (“15” in figure 1) for controlling spatial movement of the structural assembly and the sensor assembly (column 6:62-66),

the controlling means (“3” in figure 6 or 8) being operable:

(d) to apply substantially velocity feedback control ("AS" in figure 6) to said at least one actuating means when the sensor assembly is substantially remote from a desired target position (column 6:58-60);

and (e) to apply substantially position feedback control to said at least one actuating means when the sensor assembly is substantially spatially proximate to said target position (column 7;13-26), the controlling means further including pole-compensating filtering means for at least partially compensating response poles of the structural assembly (column 7:27-35) and its sensor assembly so as to result during operation of the system in smoother switching between said substantially velocity feedback control and said position feedback control for enhancing at least one of temporal and spatially responses of the system when controlled by the controlling means (column 7:9-12 and column 8:9-14).

Regarding claims 5 and 21,

Bierhoff teaches a system and method, according to claims 1 and 17, wherein the velocity feedback control is implemented substantially as a proportional-integral PI feedback control loop **(column 10:8-20, also see figure 8).**

Regarding claims 6 and 22,

Bierhoff teaches a system and method according to claims 1 and 17, wherein the position feedback control is implemented substantially as a proportional-integral-differential PID feedback control loop subject to the pole-compensating filtering means **(see “17” in figure 6).**

Regarding claims 7 and 23,

Bierhoff teaches a system and method according to claims 1 and 17, wherein the controlling means is operable to render the second actuating means slave to the first actuating means in said velocity feedback control, and to render the first actuating means **(column 8:30-35)** slave to the second actuating means in said position feedback control **(column 8:37-42).**

Regarding claims 9 and 25,

Bierhoff teaches a system and method according to claims 1 and 17, wherein data corresponding to pole responses of the structural assembly is recorded digitally as pole-response data, and the controlling means is implemented digitally to utilize said pole-response data **(column 10:4-23).**

Regarding claims 12 and 28,

Bierhoff teaches a system and method according to claims 1 and 17, wherein the pole-compensating filtering means is arranged to at least partially compensate at least one open-loop response pole of the structural assembly in combination with the actuating means and the sensor assembly by applying corresponding response-zeros to the controlling means **(column 8:9-30).**

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 2-4, 13-16, 18-20 and 29-32** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bierhoff (Patent Number 5,036,506)** in view of **Akiyama (Patent Number 5,117,410).**

Regarding claims 2 and 18,

BIERHOFF teaches a system and method according to claims 1 and 17, wherein the system is further arranged such that:

(c) said controlling means **("3" in figure 6 or 8)** is coupled in communication with the first and second actuating means for controlling spatial movement of the structural assembly and the sensor assembly,

the controlling means being operable:

(d) to apply substantially velocity feedback control to the first and second actuating means when the sensor assembly is substantially remote from the desired target position **(column 8:32-35 teaches velocity control in movement to new track);**

and (e) to apply substantially position feedback control to the first and second actuating means when the sensor assembly is substantially spatially proximate to said target position **(column 8:37-42),**

the controlling means further including the pole-compensating filtering means for at least partially compensating response poles of the bi-mass system so as to result during operation of the system in smoother switching between said substantially velocity feedback control and said position feedback control for enhancing at least one of temporal and spatially responses of the system when controlled by the controlling means **(column 8:32-48).**

Bierhoff does not explicitly teach that the device is at least a bi-mass configuration wherein said at least one actuating means comprises a first and second actuating means as claimed.

AKIYAMA teaches (a) first actuating means **("4" in figure 1)** for spatially actuating the structural assembly **("3");**

and (b) second actuating means **("2c" in figure 1)** interposed between a movable actuated region of the structural assembly **("3")** and the sensor assembly **("2d")** for actuating the sensor assembly relative to the actuated region.

It would have been obvious for one of ordinary skill in the art at the time of the invention, to provide the device of Bierhoff with a bi-mass configuration such as that which is taught by Akiyama, since said structure of Akiyama is a know variation in the

art and one of ordinary skill in the art could easily use said variation without undue experimentation and achieve predictable results.

Regarding claims 3 and 19,

Akiyama teaches a system and method according to claims 2 and 18, wherein the first actuating means **("4" in figure 1)** is arranged to provide a larger spatial actuation dynamic range than the second actuating means **("2c"),** and the second actuating means **("2c")** acting upon the sensor assembly **("2d")** is arranged to provide a more rapid temporal response than the first actuating means **("4")** acting upon the structural assembly **("3")** and thereby on the second actuating means and its associated sensor assembly.

Regarding claims 4 and 20,

Akiyama teaches a system and method according to claims 2 and 18, wherein the second actuating means **(2c)** is arranged to exhibit a smaller spatial dynamic range than the first actuating means **(4).**

Regarding claims 13 and 29,

Akiyama teaches a system and method according to claims 1 and 17 incorporated into one or more of a CD reading and/or writing device for controlling the sensor assembly implemented as an optical unit within the device, the device being operable to read data from and/or write data to CDs (**in column 1:10-13 teaches device use with compact discs, video discs or the like**).

Regarding claims 14 and 30,

Akiyama teaches a system and method according to claims 1 and 17 incorporated into one or more of a DVD reading and/or writing device for controlling the sensor assembly implemented as an optical unit within the device, the device being operable to read data from and/or write data to DVDs (**in column 1:10-13 teaches device use with compact discs, video discs or the like**).

Regarding claims 15 and 31,

Akiyama teaches a system and method according to claims 1 and 17, the system being adapted for controlling one or more of a pick-and-place robot, a crane and a machine tool **("3" in figure 1).**

Regarding claims 16 and 32,

The combined teachings of Bierhoff and Akiyama disclose a system and method according to claims 1 and 17, wherein at least one of the structural assembly, the actuating means (**"2c" or "4" in figure 1 of Akiyama**) and the sensor assembly is provided with spatial position, velocity, rotation and/or acceleration measuring means **("12" and "13" in figure 1 of Bierhoff)** for use by the controlling means **("3" of Bierhoff)** in controlling spatial location of the sensor assembly.

3. **Claims 8 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bierhoff (Patent Number 5,036,506)** in view of **Yamashita (Patent Number 5,892,742).**

BIERHOFF teaches a system and method according to claims 1 and 17, employing the use of a pre-defined spatial error between the sensor assembly and the target position **(column 8:36-42 teach the use of the position feedback signal once the region of the target track is reached, interpreted as corresponding to a "pre-defined spatial error")**.

Bierhoff does not teach that the controlling means operates as claimed.

YAMASHITA teaches that the controlling means is operable: (a) to apply an acceleration process and a subsequent deceleration braking process to the first actuating means (**column4:28-32**);

and (b) to switch between said velocity feedback control and said position feedback control when the sensor assembly assumes at least one of a pre-defined threshold velocity **(column 23:25-61).**

It would have been obvious for one of ordinary skill in the art at the time of the invention, to employ the technique taught by Yamashita within the device of Bierhoff, since said technique is known within the art for providing improved seeking performance **(column 3:63-67 of Yamashita).**

4. **Claims 10, 11, 26 and 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bierhoff (Patent Number 5,036,506)** in view of **Getreuer (Patent Number 4,855,977).**

Regarding claims 10 and 26,

BIERHOFF teaches a system and method according to claims 1 and 17.

Bierhoff fails to explicitly teach that the controlling means is arranged to exhibit a damping factor in a range of 0.6 to 1.3 when switching between velocity feedback control and position feedback control (column 7:3-6).

GETREUER teaches a system wherein the damping factor is 0.7, thereby being within the range of 0.6 and 1.3 as claimed.

Therefore it would have been obvious for one of ordinary skill in the art at the time of the invention to design the system of Bierhoff such that it has a damping factor within the range of 0.6 and 1.3, by varying known parameters such as tracking pitch and track crossing velocity, as a matter of design incentives or other market forces.

Regarding claims 11 and 27,

Bierhoff teaches the system and method according to claims 10 and 26, wherein the controlling means is arranged to be substantially critically damped when switching between the velocity feedback control and the position feedback control **(column 8:9-14).**

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIONNE H. PENDLETON whose telephone number is (571)272-7497. The examiner can normally be reached on 10:30-7:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dionne H Pendleton/
Examiner, Art Unit 2627

/Wayne R. Young/
Supervisory Patent Examiner, Art Unit 2627